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Hakan Ozdemir

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EXAMINER

MERCEDES, DISMERY E

ART UNIT

PAPER NUMBER

2627

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 09/993,779	Applicant(s) OZDEMIR, HAKAN	
	Examiner DISMERY E. MERCEDES	Art Unit 2627	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 February 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5,21-42,49 and 50 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5,21-31,33-42,49 and 50 is/are rejected.
- 7) ☒ Claim(s) 32 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 2/19/2008 have been fully considered but they are not persuasive.

Regarding Claim 1,21,27,33,37,38,49,50 Applicant argues that Christiansen fails to a read-write head having a fixed connection polarity, and compensating for a reverse connected read-write head without adjusting the polarity of the read-write head (page 15 of Remarks). However, it is noted that the features upon which applicant relies (i.e., compensating for a reverse connected read-write head without adjusting the polarity of the read-write head) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Therefore, the claim language is not limiting to as how the connection polarity of the head is determined, therefore as long as the polarity is determined based on/from the recovered servo data, which Christiansen et al. discloses (col.3, lines 5-20 wherein synch pattern in the read signal is detected and used to determine an estimated data sequence, and the synch detector determines the polarity of the MR head has deviated from a preferred polarity, thus a preset polarity has already been set in the MR head), the Examiner believes the claim limitation is met.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1-5,21-42,49-50 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not

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described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The original disclosure fails to disclose "fixed" connection polarity of the electromagnetic of the read head. The term "fixed" polarity is not defined in the instant specification.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-5,21-23,25-26,37,49 are rejected under 35 U.S.C. 102(e) as being anticipated by Christiansen et al. (US 6,369,969).

As to Claim 1, Christiansen et al. discloses a head-connection-polarity detector, comprising: a circuit operable to recover servo data from a servo signal generated by an electromagnetic read-write head that is coupled to the circuit with a fixed connection polarity (fig.2, MR head 20,30,34 and col.3, lines 5-10); and a determinator coupled to the circuit and operable to determine the connection polarity from the recovered servo data (figs.2-3A-B, 24, col.3, lines 5-20 the polarity of the bias layer of the MR head is determined, and wherein this polarity determines if it has deviated from a preferred polarity, thus a preset polarity has already being set in the head).

As to Claim 2, Christiansen et al. further discloses wherein: the circuit is operable to recover a servo-synchronization mark from the servo signal; and the determinator is operable to determine

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the connection polarity from the recovered servo-synchronization mark (fig.2, 3B wherein the circuit 71 is operable to recover a synch mark from the read signal from the servo data, and a connection polarity is determined 28 from the synch mark).

As to Claim 3, Christiansen et al. further discloses wherein the determinator is operable to generate a signal that indicates the determined connection polarity (see figs.2-3a-b wherein a polarity signal is generated col.3, lines 5-10).

As to Claim 4, Christiansen et al. further discloses wherein the circuit comprises a Viterbi detector (fig.3b, 71 wherein it shows a synch mark detector comprising a Viterbi detector).

As to Claim 5, Christiansen et al. further discloses wherein the circuit is operable to recover the servo data from the servo signal regardless of the connection polarity (fig.3b, 71 the Viterbi detector recovers servo data regardless of the connection polarity, the polarity is detected after the recovery of data).

As to Claim 21, Christiansen et al. further discloses a Viterbi detector operable to recover a synchronization mark from samples of a servo signal generated by an electromagnetic read head that is coupled to the Viterbi detector with a connection polarity (see figs.2-3b, and col.3, line 1-col.4, line 39); and a comparator coupled to the Viterbi detector and operable to determine the connection polarity from the recovered synchronization mark (fig.3b, col.4, lines 20-39 wherein the correlated signal 83 is compared to a threshold and then proceeds to generate a polarity signal).

As to Claims 22-23 have the same limitations as those treated in the rejection of claims 3 & 5 and are met by the reference as discussed above.

As to Claim 25, Christiansen et al. further discloses wherein the comparator is operable to determine the connection polarity by: comparing the recovered synchronization mark to an ideal synchronization mark on a bit-by-bit basis; determining that the connection polarity equals a first

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polarity if the number of mismatching bits is less than or equal to a first predetermined threshold; and determining that the connection polarity equals a second polarity if the number of mismatching bits is greater than or equal to a second predetermined threshold (col.3, line 26-col.4, line 10; wherein the connection polarity is determined to be the preferred when the signals 58 or 64 does not exceed threshold, and is deviated from the preferred polarity when it exceeds threshold; see also col.4, line 56-col.5, line 13col.4, line 56-col.5, line 13).

As to Claim 26, Christiansen et al. further discloses wherein the comparator is operable to determine the connection polarity by: comparing the recovered synchronization mark to an ideal synchronization mark on a bit-by-bit basis; determining that the connection polarity is positive if the number of mismatching bits is less than or equal to a first predetermined threshold; and determining that the connection polarity is negative if the number of mismatching bits is greater than or equal to a second predetermined threshold (col.3, line 26-col.4, line 10 wherein the connection polarity is determined to be the preferred when the signals 58 or 64 does not exceed threshold, and is deviated from the preferred polarity when it exceeds threshold; see also col.4, line 56-col.5, line 13).

As to Claim 37, Christiansen et al. further discloses a disk-drive system, comprising: a magnetic data-storage disk having a surface and operable to store a servo synchronization mark and other servo data (fig.2,18); a motor coupled to and operable to rotate the disk (fig.2) ; a read head having a connection polarity and operable to generate a servo signal that represents the synchronization mark and the other servo data (fig.2,20); a read-head positioning assembly operable to move the read head over the surface of the disk (fig.2,vcm); and a servo channel coupled to the read head, the servo channel comprising, a sampling circuit operable to generate samples of the servo signal (fig.4, 72), and a Viterbi detector operable to recover the synchronization mark and other servo data from the samples of the servo signal regardless of the connection polarity of the

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read head (figs.2-3A-B, wherein the Viterbi detector in conjunction with synch mark detect the synch mark pattern and further detects estimated data sequence (i.e. other data) and col.3, lines 5-20 the polarity of the bias layer of the MR head is determined, and wherein this polarity determines if it has deviated from a preferred polarity, thus a preset polarity has already being set in the head).

As to Claim 49 is a method claim drawn to the detector of claims 1,5,37 and are rejected for same reasons of anticipation as set forth in the rejection of claims 1,5,37 above.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Christiansen et al. in view of Reed et al. (US 6,052,248).

As to Claim 24, Christiansen et al. discloses the detector of claim 21, and further discloses the synchronization mark has pairs and only pairs of consecutive logic 0's and logic 1's (col.3, line 11- col.4, line 39). Although, it is inherent that a Viterbi detector comprises a path metric unit, an add-compare-select unit selecting the best surviving path metric, Christiansen et al. fails to specifically disclose: Viterbi detector comprises, a recovery circuit operable to recover the synchronization mark from the samples of the servo signal by, for each pair of samples, calculating a difference between path metrics for possible states of 00 and 11 of the synchronization mark, and determining a surviving path from the difference, the synchronization mark lying along the surviving path.

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However, Reed et al. discloses a read channel wherein synch recovery is performed using Viterbi sequence detection see col.8, line 56-col.9, line15 and figs.3 & 6 showing the trellis diagram of the Viterbi decoder). Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to provide synch recover using Viterbi algorithm as disclosed by Reed et al. and Christiansen et al. because by using maximum likelihood detection (i.e. Viterbi algorithm) it increases the signal to noise ratio and allows for higher data density (col.2, lines 30-35).

5. Claims 27-28, 30-31, 33,35,38-40,42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Christiansen et al. in view of Tuttle et al. (US 5,796,535).

As to Claim 27, has limitations that are similar to those treated in the rejection of claim 21 and are met by the reference as discussed above. Claim 27, however, also recites: a sampling circuit coupled to receive and operable to generate samples of a servo signal that represents a servo-synchronization mark and that has a phase that represents a connection polarity of an electromagnetic read head; and wherein the comparator is operable to determine the phase of the servo signal. However, Tuttle discloses such (col.8, lines 25-54; col.11, lines 55-62; col.12, line 61-col.13, line 5; col.14, lines 26-34). It would have been obvious to one of ordinary skill in the art, to modify the combination's invention with the teaching of Tuttle et al. in order to synchronize the servo data according to the polarity being read by the head device.

As to Claim 28, Tuttle et al. further discloses comparator is coupled to the sampling circuit and the sampling circuit is operable to generate the samples of the servo signal having a desired phase (col.14, lines 26-34; and col. 19, line 65 to col. 20, line 11, wherein Turtle et al. discloses that the device detects if the desired pulse is positive or negative.).

As to Claim 30, Tuttle et al. further discloses wherein: the comparator is operable to generate a phase signal that indicates the determined phase; and the sampling circuit is coupled to the phase determinator and is operable to generate the samples of the servo signal having a desired phase in response to the phase signal (col.14, lines 26-34; and col. 19, line 65 to col. 20, line 11, and figs.3-4).

As to Claim 31, Tuttle et al. further discloses wherein the phase of the servo signal represents a connection polarity between the sampling circuit and a read head that generates the servo signal (see figs.3-4,15 and col.14, lines 26-34; and col. 19, line 65 to col. 20, line 11).

As to Claim 33,35 have limitations that are the same as those treated in the rejection of claims 21 & 27, 24 and are met by the references as discussed above.

As to Claims 38-40 are method claims drawn to the apparatus of claims 27-28, 30 and are rejected for the same reasons of obviousness as set forth in the rejection of claims 27-28,30 above.

As to Claim 42, has limitations similar to those treated in the rejection of claim 26, and are met by the references as discussed above. However, Claim 42, recites determining if the servo signal is in phase or out phase when compared to a predetermined threshold. However, Tuttle et al. discloses a sampling apparatus wherein it determines that the servo signal have a desired phase, and according to the detected polarity it determines if the signals are in phase or out of phase (col.14, lines 26-34; and col. 19, line 65 to col. 20, line 11). It would have been obvious to one of ordinary skill in the art, to modify the combination's invention with the teaching of Tuttle et al. in order to synchronize the servo data according to the polarity being read by the head device.

6. Claim 29,34,41,50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Christiansen et al. in view of Tuttle et al. (US 5,796,535), further in view Hayashi (US 5,430,582).

As to Claim 29, the Christiansen et al. and Tuttle et al. discloses the detector of claim 27, but failed to specifically disclose wherein the comparator is coupled to the sampling circuit and if the determined phase is opposite to a desired phase, then the sampling circuit is operable to invert the samples of the servo signal. Hayashi discloses reproducing apparatus wherein sampled read signal is obtained and wherein a polarity switching circuit is used (fig.3,35- see col.2, line 45-col.3, line 13) for phase compensation. It would have been obvious to one of ordinary skill in the art to implement a polarity switching circuit as disclosed by Hayashi to the detector as disclosed by Christiansen and Tuttle et al. to provide phase compensation of the sampled signals (col.2, lines 14-15).

As to Claim 34, has the same limitations as to those treated in the rejection of claim 29, and are met by the references as discussed above.

As to Claims 41,50 are method claims drawn to the apparatus of claim 29 is rejected for the same reasons of obviousness as set forth in the rejection of claims 29 above.

Allowable Subject Matter

7. Claim 32 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Rezzi et al. (US 6,662,338); Rezzi et al. (US 6,492,918).

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DISMERY E. MERCEDES whose telephone number is (571)272-7558. The examiner can normally be reached on Monday - Friday, from 9:00am - 4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa Thi Nguyen can be reached on 571-272-7579. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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/D. E. M./

Examiner, Art Unit 2627

/HOA T NGUYEN/

Supervisory Patent Examiner, Art Unit 2627